

IN THE CLAIMS:

Please cancel Claims 1, 17, 34-47, 78-84 and 90-92 without prejudice or disclaimer of the subject matter.

Please amend Claims 48, 52, 56, 60, 64 and 68 as follows.

Claims 1-47. (Cancelled).

48. (Currently Amended) An image recording apparatus for performing recording using a dot pattern corresponding to each gradation value, based on image data representing each pixel by one of N gradation values, said apparatus comprising:

~~an input unit for inputting image data including gradation-value information and position information relating to each pixel;~~

selection means for selecting one dot pattern based on gradation-value information of the pixel of the image data and ~~the~~ position information of the pixel, from a dot-pattern-table storage unit for storing X (N > X, X is a natural number) dot patterns, each having a plurality of different dot patterns, corresponding to respective ones of X gradation values; and

dot-pattern generation means for generating dot patterns corresponding to (N - X) predetermined gradation values,

wherein, when a dot-pattern table corresponding to the gradation-value information is stored in the dot-pattern-table storage unit, the dot pattern selected by said selection means is recorded by a recording head, and

wherein, when a dot-pattern table corresponding to the gradation-value information is not stored in the dot-pattern-table storage unit, dot patterns corresponding to the predetermined gradation values generated by said dot-pattern generation means are recorded by the recording head.

49. (Original) An image recording apparatus according to Claim 48, wherein the dot pattern generated by said dot-pattern generation means is a dot pattern having a fixed dot arrangement.

50. (Original) An image recording apparatus according to Claim 49, wherein the dot pattern generated by said dot-pattern generation means is a dot pattern in which no dot is recorded on all dot positions.

51. (Original) An image recording apparatus according to Claim 49, wherein the dot pattern generated by said dot-pattern generation means is a dot pattern in which dots are recorded on all dot positions.

52. (Currently Amended) An image recording apparatus for performing recording using a dot pattern corresponding to each gradation value, based on image data representing each pixel by one of N gradation values, said apparatus comprising:

~~an input unit for inputting image data including gradation-value information and position information relating to each pixel;~~

a dot-pattern-table storage unit for storing X ($N > X$, X is a natural number) dot-pattern tables, each having a plurality of different dot patterns, corresponding to respective ones of X gradation values;

first selection means for selecting one dot pattern from said dot-pattern-table storage unit, based on gradation-value information of the pixel of the image data and position information of the pixel;

a second selection means for selecting one dot pattern from the dot-pattern table selected by said first selection means, based on position information of the pixel;
and

dot-pattern generation means for generating dot patterns corresponding to $(N - X)$ predetermined gradation values,

wherein the dot-pattern table is a two-dimensional table expanding in a first direction corresponding to a direction of arrangement of nozzles of the recording head and in a second direction different from the first direction,

wherein a number of cells L within the dot-pattern table in the first direction and a number of nozzles A of the recording head have a relationship of $L = \infty \times A$ (∞ is a natural number),

wherein, when a dot-pattern table corresponding to the gradation-value information is stored in said dot-pattern-table storage unit, the dot pattern selected by said second selection means is recorded by a recording head, and

wherein, when a dot-pattern table corresponding to the gradation-value information is not stored in said dot-pattern-table storage unit, the dot patterns corresponding to the predetermined gradation values generated by said dot-pattern generation means are recorded by the recording head.

Claims 53-55. (Cancelled).

56. (Currently Amended) An image recording apparatus for performing recording using a dot pattern corresponding to each gradation value, based on image data representing each pixel with one of N (N is an integer equal to or larger than 3) gradation values, said apparatus comprising:

~~an input unit for inputting image data including gradation-value information and position information relating to each pixel;~~

a dot-pattern-table storage unit for storing X ($N > X$, X is a natural number) dot-pattern tables, each having a plurality of different dot patterns, corresponding to X gradation values provided at intervals of every other gradation level;

first selection means for selecting one dot-pattern table from said dot-pattern-table storage unit, based on gradation-value information of the pixel of the image data and position information of the pixel;

second selection means for selecting one dot pattern based on position information of the pixel, from the dot-pattern table selected by said first selection means; and

dot-pattern interpolation means for generating dot patterns corresponding to $(N - X)$ predetermined gradation values, based on a dot pattern within the dot-pattern table corresponding to a gradation value larger than a corresponding one of the predetermined gradation values by one, and a dot pattern within the dot-pattern table corresponding to a gradation value smaller than the corresponding one of the predetermined gradation values by one,

wherein the dot-pattern table is a two-dimensional table expanding in a first direction corresponding to a direction of arrangement of nozzles of the recording head and in a second direction different from the first direction,

wherein a number of cells L within the dot-pattern table in the first direction and a number of nozzles A of the recording head have a relationship of $L = \alpha \times A$ (α is a natural number),

wherein, when a dot-pattern table corresponding to the gradation-value information is stored in said dot-pattern-table storage unit, the dot pattern selected by said second selection means is recorded by a recording head, and

wherein, when a dot-pattern table corresponding to the gradation-value information is not stored in said dot-pattern-table storage unit, the dot patterns corresponding to the predetermined gradation values generated by said dot-pattern interpolation means are recorded by the recording head.

Claims 57-59. (Cancelled).

60. (Currently Amended) An image recording method for performing recording using a dot pattern corresponding to each gradation value, based on image data representing each pixel by one of N gradation values, said method comprising the steps of:

~~an input step for inputting image data including gradation-value information and position information relating to each pixel;~~

a selection step for selecting one dot pattern based on gradation-value information of the pixel of the image data and position information of the pixel, from a dot-pattern-table storage unit for storing X ($N > X$, X is a natural number) dot patterns, each having a plurality of different dot patterns, corresponding to respective ones of X gradation values, and

a dot-pattern generation step for generating dot patterns corresponding to (N - X) predetermined gradation values,

wherein, when a dot-pattern table corresponding to the gradation-value information is stored in the dot-pattern-table storage unit, the dot pattern selected in said selection step is recorded by a recording head, and

wherein, when a dot-pattern table corresponding to the gradation-value information is not stored in the dot-pattern-table storage unit, the dot patterns corresponding to the predetermined gradation values generated in said dot-pattern generation step are recorded by the recording head.

Claims 61-63. (Cancelled).

64. (Currently Amended) An image recording method for performing recording using a dot pattern corresponding to each gradation value, based on image data representing each pixel by one of N gradation values, said method comprising the steps of:

~~an input step for inputting image data including gradation-value information and position information relating to each pixel;~~

a first selection step for selecting one dot pattern based on gradation-value information of the pixel of the image data and position information of the pixel, from a dot-pattern-table storage unit for storing X ($N > X$, X is a natural number) dot patterns, each having a plurality of different dot patterns, corresponding to respective ones of X gradation value;

a second selection step for selecting one dot pattern from the dot-pattern table selected in said first selection step, based on position information of the pixel; and

a dot-pattern generation step for generating dot patterns corresponding to (N - X) predetermined gradation values,

wherein the dot-pattern table is a two-dimensional table expanding in a first direction corresponding to a direction of arrangement of nozzles of the recording head and in a second direction different from the first direction,

wherein a number of cells L within the dot-pattern table in the first direction and a number of nozzles A of the recording head have a relationship of $L = \infty \times A$ (∞ is a natural number),

wherein, when a dot-pattern table corresponding to the gradation-value information is stored in the dot-pattern-table storage unit, the dot pattern selected in said second selection step is recorded by a recording head, and

wherein, when a dot-pattern table corresponding to the gradation-value information is not stored in the dot-pattern-table storage unit, the dot patterns corresponding to the predetermined gradation values generated in said dot-pattern generation step are recorded by the recording head.

Claims 65-67. (Cancelled).

68. (Currently Amended) An image recording method for performing recording using a dot pattern corresponding to each gradation value, based on image data representing each pixel with one of N (N is an integer equal to or larger than 3) gradation values, said method comprising the steps of:

~~an input step for inputting image data including gradation-value information and position information relating to each pixel;~~

a first selection step for selecting one dot-pattern table based on gradation-value information of the pixel of the image data and position information of the pixel, from a dot-pattern-table storage unit for storing N ($N > X$, X is a natural number) dot-pattern tables, each having a plurality of different dot patterns, corresponding to X gradation values provided at intervals of every other gradation level

a second selection step for selecting one dot pattern based on position information of the pixel, from the dot-pattern table selected in said first selection step; and

a dot-pattern interpolation step for generating dot patterns corresponding to $(N - X)$ predetermined gradation values, based on a dot pattern within a dot-pattern table corresponding to a gradation value larger than a corresponding one of the predetermined gradation values by one, and a dot pattern within a dot-pattern table corresponding to a gradation value smaller than the corresponding one of the predetermined gradation values by one,

wherein the dot-pattern table is a two-dimensional table expanding in a first direction corresponding to a direction of arrangement of nozzles of a recording head and in a second direction different from the first direction,

wherein a number of cells L within the dot-pattern table in the first direction and a number of nozzles A of the recording head have a relationship of $L = \infty \times A$ (∞ is a natural number),

wherein, when a dot-pattern table corresponding to the gradation-value information is stored in the dot-pattern-table storage unit, the dot pattern selected in said second selection step is recorded by a recording head, and

wherein, when a dot-pattern table corresponding to the gradation-value information is not stored in the dot-pattern-table storage unit, the dot patterns corresponding to the predetermined gradation values generated in said dot-pattern interpolation step are recorded by the recording head.

Claims 69-92. (Cancelled).